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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/599,950

11/13/2006

Peter Grochal

116047-150597

7128

25943 7590 12/07/2010

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EXAMINER

LANGMAN, JONATHAN C

ART UNIT

PAPER NUMBER

1784

MAIL DATE

DELIVERY MODE

12/07/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/599,950	Applicant(s) GROCHAL, PETER	
	Examiner JONATHAN C. LANGMAN	Art Unit 1784	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-49 is/are pending in the application.
- 4a) Of the above claim(s) 43-47 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-42, and 49 is/are rejected.
- 7) ☒ Claim(s) 48 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/22/2010</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

Claim 19 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 19 sets forth that the binder comprises silicone or silicate. This limitation has already been set forth in claim 15 and therefore fails to further limit the parent claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 15-20, 30-33, 36-42, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. (WO/2003/102091) wherein (US 2005/0277543) is used as the English translation.

Regarding claims 15, 16, 19, 20 and 31-33 and 42 Takahashi teach a self cleaning coating material (abstract) for coating facades and other building surfaces ([0179]) that comprises photocatalytic oxide particles and silica particles dispersed in a

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hydrophobic resin emulsion and water ([0033]). The photocatalytic oxide particles and the silica particles are less than 0.1 microns ([0040]).

Binding agent

The hydrophobic resin (instantly claimed binding agent) is a silicone emulsion ([0083] and [0085]) and is present in amounts of 5 - 98% by weight, and preferably the total content of these resins in the total solid matter of the coating composition is 10 to 90% by weight ([0156]).

Takahashi fails to teach a specific example where the silicone resin binding agent is about 10 to about 30 weight percent of the entire coating material, as claimed. However, Takahashi teaches that the total solid matter of the coating composition is between 30 and 60% by weight ([0172]-[0174]), with 40% by weight exemplified in almost all of the examples.

A binding agent of 10-90% by weight at 40% solids content is equal to 4 to 36 percent by weight of the entire coating composition. This falls within the applicants claimed range of 10-30% by weight of the entire composition.

It would have been obvious to one of ordinary skill in the art at the time of the present invention to use 10-90 percent by weight (equivalent to 4-36 percent by weight of the entire coating composition, as shown above) of a silicone binding agent in the coating composition as taught by Takahashi, as Takahashi recognizes that using the resin in amounts of less than 10% results in lower physical properties, and more than 90% results in the photocatalytic agent becoming insufficient ([0156]). As described above, this obvious range of silicone binding agent is equivalent to 4-36 % by weight of

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the entire coating composition, and therefore falls within the claimed range of 10-30% by weight of the entire coating composition.

Photocatalytic Agent

Takahashi teaches the photocatalytic oxide is present in amounts of 1-20 percent by weight of the total solid matter of the coating composition ([0047] and [0048]). As described above, Takahashi teaches that the total solid matter of the entire coating composition is between 30 and 60% by weight ([0172]-[0174]), with 40% by weight exemplified in almost all of the examples.

A photocatalytic oxide present in amounts of 1-20% by weight at 40% solids content is equal to 0.4-8% by weight photocatalytically active agent in regards to the weight of the entire coating composition.

It would have been obvious to one of ordinary skill in the art at the time of the present invention to use 1-20% by weight (equivalent to 0.4-8 percent by weight of the entire coating composition, as shown above) of a photocatalytic oxide (active agent) in the coating composition as taught by Takahashi, as Takahashi recognizes that using the photocatalytic oxide in amounts of more than 1% by weight allows the contact angle of the coating film surface to be small and hence the coating film preforms a self cleaning function right after its use. Furthermore, Takahashi recognizes that less than 20% is preferred in order to avoid the effect of the photocatalytic oxide on the binder, and therefore the self cleaning function of the coating is maintained for a long time ([0045] and [0046]). As described above, this obvious range is equivalent to 0.4-8.0 %

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by weight of photocatalytic oxide and therefore falls within the claimed range of 2-15% by weight of the entire coating composition.

Takahashi teaches the same binding agent, a hydrophobic silicone resin, as instantly claimed and taught (see instant specification page 8, [0023]), therefore it is the Examiner's position that the hydrophobic resin is inherently capable of decomposing due at least in part by a photocatalytic action of the photocatalytically active agent, as presently claimed.

Although Takahashi does not teach that their surface is self regenerating, the coating composition of Takahashi is substantially the same as the claimed coating, wherein Takahashi teaches the same binder, photocatalytic oxide, and the same silica inorganic filler as claimed, in amounts that are substantially the same as those amounts claimed, and therefore it is the examiners position that the coating composition of Takahashi will inherently form a self regenerating surface to some degree.

Furthermore it is expected that the coating composition of Takahashi is capable of forming a microstructured, self cleaning surface that photocatalytically reduces by about 0.1 microns and by about 1 micron or more per year in response to external weathering, as well as the decomposition being equivalent to chalking level of 1 or less.

It has been held that where the claimed and prior art products are identical or substantially identical in structure or are produced by identical or a substantially identical processes, a prima facie case of either anticipation or obviousness will be considered to have been established over functional limitations that stem from the

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claimed structure. *In re Best*, 195 USPQ 430, 433 (CCPA 1977), *In re Spada*, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). The ***prima facie*** case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed products. *In re Best*, 195 USPQ 430, 433 (CCPA 1977).

A material and its properties are inseparable. Since Takahashi teaches a substantially similar coating composition as instantly claimed, it is inherent that the coating composition of Takahashi will possess the same properties as instantly claimed, i.e. the claimed chalking and photocatalytic reduction rates.

Regarding claim 17, since Takahashi teaches the same materials and suggests the same weight percents as instantly claimed, it is inherent that the binding agent of Takahashi is at least partially photocatalytically degradable (see *in re best case law* applied above).

Regarding claim 18, Takahashi teaches that the binding agent comprises a nanocomposite material including a hydrophobic resin, or a preliminary resin product ([0157]-[0158]).

Regarding claim 30, Takahashi teaches that anatase form titanium oxide is preferred ([0081]).

Regarding claims 36-38, Takahashi teaches that the silica is mono-modal particle size distribution silica with particle sizes between 20 and 30 nms ([0190]).

Regarding claim 39, the applicant is not claiming a specific amount of binder, and therefore any amount can be considered excess. Excess is a descriptive term that can be interpreted to mean different amounts from application to application. Since

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Takahashi teaches a binder, it is the Examiner position that this binder can be interpreted to be in excess to some degree.

Regarding claims 40 and 41, Takahashi teaches adding a pigment (Table 11 and [0063]).

Regarding claim 49, as described above the photocatalytic oxide is present in amounts of 0.4 to 8.0 percent by weight. Furthermore, the range of 4-36 percent by weight silicone binding agent reads on the claimed limitation of about 20 weight percent. Also Takahashi teaches the silica filler is present in amounts of 1-90% by weight of the total solids matter (which for reasons mentioned above is 30-60 and exemplified to be 40% by weight solids). This equates to 0.4 to 36% by weight of the entire coating composition, and therefore falls within the claimed range of 5-15 percent by weight.

Claims 21-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. (WO/2003/102091) wherein (US 2005/0277543) is used as the English translation, as applied to claim 20 above, in view of Chopin et al. (US 6,037,289).

Regarding claims 21-29, Takahashi teaches a coating composition comprising photocatalytic particles of TiO_2 . Takahashi teaches that photocatalytic particles with V, Fe, Co, Ni, Cu, Zn, as a second component on or in the particles are preferable because they have improved photocatalytic activity ([0162]), however is silent to the additive being an oxide, or halogenide of those materials.

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Chopin et al. teach a coating comprising photocatalytic particles of Titania.

Chopin goes on to teach that in order to amplify the photocatalytic effect one can adding catalysts and additives to the TiO_2 particles (col. 4, lines 29-52). Chopin teaches coating titanium dioxide particles with oxides of Fe, Cu, Ru, Ce, Mo, Bi, Ta, Nb, Co, Ni, W, Sn, Zr, Ca, and Zn, in amounts of 0.01-20% compared to the titanium dioxide particles.

It would have been obvious to a person having ordinary skill in the art at the time the present invention was made to dope the titanium dioxide particles of Takahashi with the metal oxides in their respective amounts as taught by Chopin in order to increase the photocatalytic effect of the titanium dioxide particles. These obvious compositional ranges taught by Chopin overlap those compositional ranges set forth in instantly claims 21-29.

Claims 34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. (WO/2003/102091) wherein (US 2005/0277543) is used as the English translation, as applied to claim 33 above.

Takahashi teaches coating compositions as seen in Table 11, that comprise a filler of highly disperse colloidal silica (table 11, [0190]), as described above. Takahashi is silent to a specific embodiment that comprises sol-gel derived silica, as instantly claimed.

However, Takahashi teaches that chain like silica may be used ([0160]), and also teaches that silica aerosol may be used as an alternative to colloidal silica as the filler

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([0246]). It would have been obvious to use sol gel derived silica (aerosol silica) or chain like silica, as described by Takahashi, as an alternative to the colloidal silica of the coating compositions of table 11, as Takahashi discloses that these are known and viable alternatives to colloidal silica.

Response to Arguments

In regards to the request for rejoinder, the restriction requirement is still deemed proper for the reasons mentioned in the restriction requirement, and the claims are not found allowable for the reasons mentioned above and below. Therefore the applicants are not granted rejoinder at this time in prosecution.

Applicant's amendments have overcome the rejections set forth under 35 U.S.C. 112 1st paragraph.

Takahashi

Applicant argues on page 10 of the remarks, that applicants claims are drawn to a binding agent comprising silicone or silicate in an amount of 10 to about 30%. Applicant argues that the silicone described in the cited passages of examples 22 and 23 do not fall within the claimed range. The examiner agrees, and these passages are withdrawn from the rejection.

However, upon further consideration, even though Takahashi does not teach a specific example with the claimed silicone binding agent amounts of 10-30%, Takahashi

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does teach that the binder can be 4-36% by weight. And therefore it would have been obvious to one of ordinary skill in the art at the time of the present invention to use this amount of binder in their coating composition.

Applicant argues on page 11, that the claimed automatic regeneration is possible only if the filler, the photocatalytic particles and the decomposable binding agent are dispersed homogeneously within the coating composition, where the binding agent forms the self cleaning surface. The applicant argues that in contrast, Takahashi teaches that the particles are not homogeneously distributed.

Applicant's claims do not set forth that the constituents of the coating composition are homogeneously distributed.

Furthermore, it is noted that "the arguments of counsel cannot take the place of evidence in the record", *In re Schulze*, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965). It is the examiner's position that the arguments provided by the applicant regarding that automatic regeneration is possible only if the filler, the photocatalytic particles and the decomposable binding agent are dispersed homogeneously within the coating composition must be supported by a declaration or affidavit. As set forth in MPEP 716.02(g), "the reason for requiring evidence in a declaration or affidavit form is to obtain the assurances that any statements or representations made are correct, as provided by 35 U.S.C. 24 and 18 U.S.C. 1001".

Takahashi teaches specific embodiments that comprise the instantly claimed binder, filler, and photocatalytic oxide, the amounts claimed are obvious in light of the general teachings of Takahashi. Therefore it is the examiner's position that at least

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partial decomposition (instant claim 17), self regeneration, as well as the claimed photocatalytic properties, and chalking levels, are inherent properties and characteristics to the coating compositions of Takahashi (see in re best case law applied above).

On page 12, applicant argues that Takahashi's teaching of a sufficiently thick film to shield 99.9% or more of UV rays, which makes it possible to prevent the substrate from deteriorating due to UV rays, shows that Takahashi fails to disclose or suggest that the binding agent is capable of decomposing due at least in part by a photocatalytic action of the photocatalytically active agent to form the self cleaning surface.

However, as described above, Takahashi teaches a coating composition that comprises a silicone binding agent, at least one filler, and a photocatalytically active agent. The coating composition is intended to produce a self cleaning surface for a building façade. The claimed compositional ranges are obvious as described above. Therefore, it is the examiners position that since Takahashi teaches the same materials and suggests the same compositional ranges as claimed that the binding agent of Takahashi must be capable of decomposing at least in part by a photocatalytic action. Applicant has not provided evidence of the contrary.

Regarding claim 48, the rejection of this claim over Takahashi is withdrawn. In the last office action, it was the examiners position that the claims are to a final coating and not a composition. The examiner withdraws from this position. The claims are in fact to a coating composition "capable" of achieving the claimed properties. Since Takahashi teaches a solids content of at most 60% (i.e. 40% or greater water), with

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preferred embodiments of 40% solids content (60% water), Takahashi does not teach or render obvious the composition of claim 48.

Watanabe

Watanabe is withdrawn in light of the applicants arguments set forth on September 22, 2010. Watanabe fails to teach or disclose a binding agent comprising silicone or silicate in an amount of about 10 to about 30 weight percent of the coating material.

Allowable Subject Matter

Claim 48 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JONATHAN C. LANGMAN whose telephone number is (571)272-4811. The examiner can normally be reached on Mon-Thurs 8:00 am - 6:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JCL
/Jonathan C Langman/
Examiner, Art Unit 1784